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The OPAL equation of state and opacity are based on a many body activity expansion of the grand partition function. This procedure becomes increasingly complex as the Coulomb coupling increases, as in low mass stars. The existing calculations have included terms through 5/2 order in the coupling parameter and are valid for stars more massive than about 0.8 solar. We have undertaken an effort to include higher order terms in the coupling parameter in order to extend OPAL down to about 0.3 solar. In the present paper we present some new results that extend down to 0.5 solar mass stars.

Laser techniques to measure the opacity under these conditions are just now being developed. However, high pressure shock wave techniques for measuring the equation of state are well established. Comparison of the extended OPAL equation of state with shock data will be shown.

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